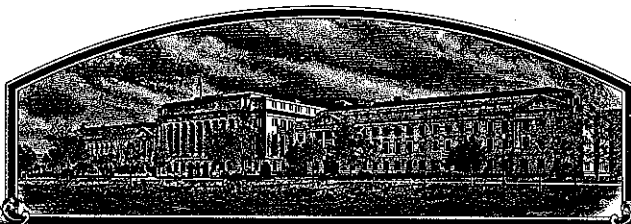


No.

9000028



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Minnesota Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Kato'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of December in the year of our Lord one thousand nine hundred and ninety-one.

Attest

Kenneth Kew
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Minnesota Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. M81-382	3. VARIETY NAME Kato
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) University of Minnesota 220 Coffey Hall 1420 Eckles Avenue St. Paul, MN 55108		5. PHONE (include area code) 612/625-4221	FOR OFFICIAL USE ONLY PVPO NUMBER 9000028 FILING Date <u>Nov. 16, 1989</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. FEE Filing and Examination Fee: \$ <u>2150.-</u> Date <u>Nov. 16, 1989</u> RECEIVED Certificate Fee: \$ <u>250.-</u> Date <u>Dec. 16, 1991</u>
6. GENUS AND SPECIES NAME Glycine max	7. FAMILY NAME (Botanical) Leguminosae		
8. CROP KIND NAME (Common Name) Soybean		9. DATE OF DETERMINATION Nov. 19, 1988	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) State Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
J.H. Orf, Department of Agronomy and Plant Genetics
University of Minnesota, 1991 Buford Circle
411 Borlaug Hall
St. Paul, MN 55108

PHONE (include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☐ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

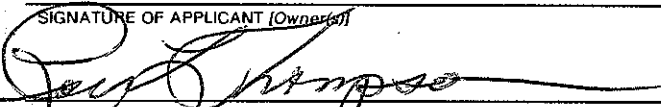
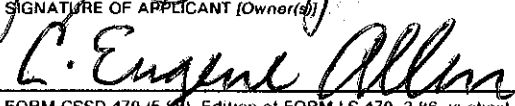
SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE Assistant Director	DATE November 10, 1989
SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE Acting Director	DATE November 10, 1989

Exhibit A

Origin and Breeding History of Kato Soybean

'Kato' traces to the F_5 progeny of an F_4 plant pulled from a population that had been advanced by a modified single seed descent procedure from the cross M70-127 x Century. M70-127 is a line derived from the cross Evans x M63-217Y; M63-217Y is a sib of the cultivar Hodgson having yellow hilum. Bulk seed of the F_5 row was designated M81-382 and was used for yield testing in the F_6 (1982). Subsequent tests of strain M81-382 were conducted in the F_7 (1983) and F_8 (1984). In the F_8 generation, 50 typical plants were selected to initiate purification for observable traits including reaction to race 1 of Phytophthora root rot. In the F_9 (1985), M81-382 was entered in the Maturity Group I Preliminary Regional Soybean Test. In 1985, thirty-nine rows were grown for purification purposes. Twenty-one rows appeared uniform for plant and seed characteristics including resistance to race 1 of Phytophthora root rot, therefore, seed of these rows were bulked to provide the breeders' seed. In the F_{10} (1986), F_{11} (1987) and F_{12} (1988), M81-382 was tested in the Uniform Regional Soybean Test Maturity Group I. In the F_{10} (1986), a small increase of breeders' seed was made. In the F_{11} (1987), foundation seed was produced by the Minnesota Foundation Seeds Organization. The foundation seed produced was shared with other states for increase. In the F_{12} (1988), seed was increased and M81-382 was approved for release as Kato. On February 15, 1989, seed of Kato was released to registered and/or certified growers in Minnesota and South Dakota. No off type variants were noted in the seed multiplication process of Kato over three generations, thus the variety breeds true and meets certification standards.

9000028

Exhibit B

Novelty Statement

'Kato' is most similar to 'Sibley'. Kato has purple flowers versus white flowers for Sibley. Kato has tawny pubescence while Sibley has gray pubescence. The hilum color for Kato is black while the hilum color for Sibley is yellow. Kato matures approximately the same time as Sibley, has about the same yield potential and is about two inches taller. Kato has larger seeds than Sibley. Kato has a better plant lodging score but a poorer seed quality score than Sibley. The protein content of Kato is considerably higher than Sibley but the oil content of Kato is lower than the oil content of Sibley. Both varieties have the *Rps1* gene for Phytophthora root rot resistance.

Data comparing Kato and Sibley is taken from Uniform Test I Northern States 1986-88 (a total of 43 tests for most traits).

Variety	Date mature	Yield bu/ac	Height inches	Lodging score	Seed		Seed size g/100	Oil %	Protein %
					quality score				
Kato	9/14	42.2	36	1.5	2.5		19.5	19.7	42.1
Sibley	9/14	42.0	34	2.1	2.0		17.3	21.4	39.7

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Minnesota Agricultural Experiment Station	TEMPORARY DESIGNATION M82-382	VARIETY NAME Kato
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) University of Minnesota 220 Coffey Hall, 1420 Eckles Avenue St. Paul, MN 55108		FOR OFFICIAL USE ONLY PVPO NUMBER 9000028

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = ≤ 1.2)
 3 = Elongate (L/T ratio ≥ 1.2 ; T/W = ≤ 1.2)

2 = Spherical Flattened (L/W ratio ≥ 1.2 ; L/T ratio = ≤ 1.2)
 4 = Elongate Flattened (L/T ratio ≥ 1.2 ; T/W ≥ 1.2)

2. SEED COAT COLOR: (Mature Seed)

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other (Specify) _____

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow 2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low^a 2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a) 2 = Type B (SP1^b)

9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
 4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (Specify) _____

11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

14. POD COLOR:

☐ 2

1 = Tan

2 = Brown

3 = Black

15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

17. PLANT HABIT:

3

☒ 1

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☐ 0 ☐ 4

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐ 0Bacterial Blight (*Pseudomonas glycinea*)☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐ 0

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 2Powdery Mildew (*Microsphaera diffusa*)☐ 1Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

<input type="text" value="0"/>	Pod and Stem Blight (<i>Diaporthe phaseolorum</i> var. <i>sojae</i>)												
<input type="text" value="0"/>	Purple Seed Stain (<i>Cercospora kikuchii</i>)												
<input type="text" value="0"/>	Rhizoctonia Root Rot (<i>Rhizoctonia solani</i>)												
Phytophthora Rot (<i>Phytophthora megasperma</i> var. <i>sojae</i>)													
<input type="text" value="2"/>	Race 1	<input type="text" value="0"/>	Race 2	<input type="text" value="1"/>	Race 3	<input type="text" value="1"/>	Race 4	<input type="text" value="0"/>	Race 5	<input type="text" value="0"/>	Race 6	<input type="text" value="0"/>	Race 7
<input type="text" value="0"/>	Race 8	<input type="text" value="0"/>	Race 9	<input type="text" value="0"/>	Other (Specify) _____								

VIRAL DISEASES:

<input type="text" value="0"/>	Bud Blight (Tobacco Ringspot Virus)
<input type="text" value="0"/>	Yellow Mosaic (Bean Yellow Mosaic Virus)
<input type="text" value="0"/>	Cowpea Mosaic (Cowpea Chlorotic Virus)
<input type="text" value="0"/>	Pod Mottle (Bean Pod Mottle Virus)
<input type="text" value="0"/>	Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (<i>Heterodera glycines</i>)									
<input type="text" value="1"/>	Race 1	<input type="text" value="0"/>	Race 2	<input type="text" value="1"/>	Race 3	<input type="text" value="0"/>	Race 4	<input type="text"/>	Other (Specify) _____
<input type="text" value="0"/>	Lance Nematode (<i>Hoplolaimus Colombus</i>)								
<input type="text" value="0"/>	Southern Root Knot Nematode (<i>Meloidogyne incognita</i>)								
<input type="text" value="0"/>	Northern Root Knot Nematode (<i>Meloidogyne Hapla</i>)								
<input type="text" value="0"/>	Peanut Root Knot Nematode (<i>Meloidogyne arenaria</i>)								
<input type="text" value="0"/>	Reniform Nematode (<i>Rotylenchulus reniformis</i>)								
<input type="text"/>	OTHER DISEASE NOT ON FORM (Specify): _____								

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="text" value="2"/>	Iron Chlorosis on Calcareous Soil
<input type="text"/>	Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

<input type="text" value="0"/>	Mexican Bean Beetle (<i>Epilachna varivestis</i>)
<input type="text" value="0"/>	Potato Leaf Hopper (<i>Empoasca fabae</i>)
<input type="text" value="0"/>	Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Hodgson 78	Seed Coat Luster	Sibley
Leaf Shape	Hodgson 78	Seed Size	Sibley
Leaf Color	Hodgson 78	Seed Shape	Sibley
Leaf Size	Hodgson 78	Seedling Pigmentation	Hodgson 78

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Kato Submitted	120	1.5	91	9.2	11.7	42.1	19.7	19.5	2.4
Sibley Name of Similar Variety	120	2.1	86	9.8	11.9	39.7	21.4	17.3	2.4

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

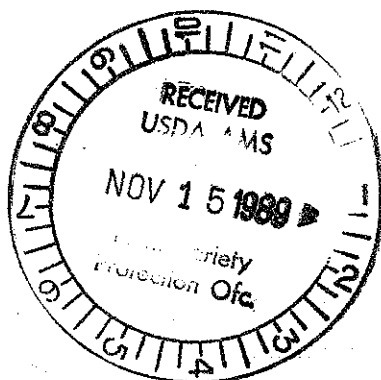


Exhibit E**Statement of the Basis of Ownership**

The Minnesota Agricultural Experiment Station is the owner of Kato. The Minnesota Agricultural Experiment Station is the employer of the breeders who developed Kato.